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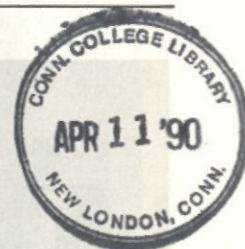
CONNECTICUT

Conn. Documents

ENVIRONMENT



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Valley Railroad, Essex

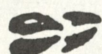
March/1990

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Editor's Note

Working with the environment is very much a hardball game. While some environmental issues may seem less critical than others — suitable habitat for a particular species of wildflower as opposed to drinking water contaminated by gasoline, for example — ultimately all narrow down to issues of life and death. To survive or not survive. Who makes it, and who doesn't.

Recently, in preparation for future projects, I spent some time with Mr. Glenn Dreyer, of the Connecticut College Arboretum in New London. We were discussing Mr. Dreyer's ongoing survey of historic and notable trees in Connecticut. These are the great and noble trees, some many hundred years old, that are part of state's most wonderful treasures. There is something about these great trees that elevates the human spirit. Here in Connecticut, we have a number of national champs.

Mr. Dreyer has been at this survey for about five years. I asked him what conclusions he had drawn over that period.

"Five years is a relatively short time for these trees," he said. "But over that period, just due to accidents, to circumstance, to natural events, many have been lost. In just five years Connecticut has experienced floods, tornadoes, and hurricanes, all of which took their toll on these trees. I began to see how miraculous it was for any given tree to have lasted so long. The odds are against it. If for no other reason than just because they have survived, these great trees deserve respect."

Not to be taken lightly, this survival. By no means an automatic. The recent survival of *Connecticut Environment* has been due, in great part, to the help of Sue Carsten. Thanks are in order.

R.P.



Kathleen Golas, chairperson and executive director of the Connecticut Hazardous Waste Management Service: "I would be glad to see the problem go away, but we have no choice."

Low-Level Radioactive Waste

Where will we put it?

(The subject of the following interview, first broadcast on the television series Environment, is low-level nuclear waste and, specifically, the prospect of siting a permanent disposal facility for that waste here in Connecticut. The guest was Kathleen Golas, chairwoman of the Connecticut Hazardous Waste Management Service. Ms. Golas is a scientist who is quite able to deal with very technical, hard science issues, and at the same time she is a person who maintains contact with the human element in some very delicate areas.)

CE: What is the Hazardous Waste Management Service?

KG: The Connecticut Hazardous Waste Management Service was set up about six years ago by the State Legislature. We're a small quasi-public agency with the responsibility for hazardous chemical waste planning and providing assistance to generators of hazardous waste in reducing waste. In 1987,

the Legislature gave us a new responsibility, and that is to locate a facility for low-level radioactive waste.

CE: Just what is radioactive waste? What is radiation?

KG: We'll start with radiation. Radiation is a natural phenomenon. Basically, most of the atoms that make up the universe are rather stable; that is, they don't want to change. But some atoms are unstable. They have a lot of energy cooped up in that atom and they try to get rid of that energy and become more stable. In doing that, they release radiation. That radiation can take several forms, some forms have higher energy than other forms.

CE: What does this radiation do to people?

KG: Radiation can damage living cells. That can be beneficial if you're getting cancer treatment because

you want to kill those cells, but not beneficial if healthy cells get damaged. In addition to the natural sources of radiation, there are man-made sources. About half of the radiation that we get comes from natural sources, and the other half comes from man-made sources.

CE: Now there is low-level radioactive waste and high-level radioactive waste. Could you clarify what those are?

KG: Now we are moving from radiation to the waste materials. When a radioactive element is used for medical diagnostic or treatment purposes or in a smoke detector, for industrial purposes, or electrical generation, the waste resulting from the use may be low-level radioactive waste. Low-level includes a wide range of radioactivity. The spent nuclear fuel rods for power plants are considered high-level. Our facility would only be for low-level waste. It would not take high-level waste which is the responsibility of the federal government.

CE: What amounts of low-level waste do we generate here in Connecticut?

KG: Sometimes it's helpful to compare the volume of low-level radioactive waste to household waste. In volume, we generate about 2,000 times less low-level radioactive waste than we do household waste. About 2.8 million tons of municipal waste are generated each year in Connecticut. In terms of low-level waste, we're talking about 1300 tons. In terms of volume, it's probably a basketball court filled eight feet deep every year.

CE: Relatively not a lot considering the rest of the wastes we generate.

KG: Compared to the other types of waste that we generate, it's not much.

CE: Who has been generating it?

KG: In Connecticut, the primary generators of low-level radioactive waste are the four nuclear power plants. They are responsible for approximately 60 percent of the volume of the waste. It is important to consider not only the volume, but the level of radioactivity in that waste. In terms of the level of radioactivity, the power plants are responsible for 99.9 percent of the radioactivity of the waste. Those power plants also provide Connecticut with 60 percent of its electricity. The rest of the country on average gets a much smaller percentage of electricity from their nuclear power plants. We are heavily dependent on nuclear power.

CE: Physically, what kind of stuff is the waste?

KG: It is many different things. For example, when maintenance workers go into a power plant to repair something, they wear protective clothing. That clothing may get contaminated with radioisotopes and no longer be usable. In some cases it's cleaned, and can be re-used, but then the cleaning fluid becomes radioactive. It could be the protective clothing, paper, or tools. It also includes instrumentation that is no longer useful. Some pretty ordinary things, but they're contaminated with radioactivity.

CE: And thus they have to be contained at some safe point for a long period of time.

KG: Yes, up to hundreds of years.

CE: What have we been doing with this contaminated material up to this point?

KG: Currently, and in the recent past, we have been sending waste to three disposal facilities. The entire country has been relying on these facilities in South Carolina, the state of Washington, and in Nevada. In 1979, those states decided that they no longer wanted to accept the waste from the entire country. They lobbied Congress to get a law passed that made all states responsible for their own waste.

CE: And Congress did pass that law and that's what you're responding to.

KG: Right. That is why Connecticut must find its own disposal facility site.

CE: What is the Connecticut Hazardous Waste Management Service's mandate at this time?

KG: Our responsibilities come from federal and state law. We have several tasks, one of which we have completed and are in the process of updating and that is to develop a low-level radioactive waste plan. This document went out to the public over a year ago and we received a significant amount of comment on it. Each comment was responded to in a comment response document. It tells everything you want to know about low-level radioactive waste in Connecticut. That's our first responsibility. The second is to choose three potential sites for a disposal facility from which a preferred site will be selected in a year-long process that will be very thorough. The facility we envision will be built using steel-reinforced concrete -- something akin to a vault. And there will be extensive monitoring. It is important that people understand the kind of facility we are proposing.

CE: Just to backtrack a bit, we talked about the low-level nuclear waste being generated by the nuclear power plants but, in fact, there are other sources of low-level nuclear waste. Could you mention a few of them?

KG: Hospitals, research institutions, manufacturers and others use processes that result in low-level radioactive waste. Some of these procedures are life-saving, others improve the quality of our lives and many people share in the benefits of these activities. Even the power plants, which are the largest low-level radioactive waste generators, provide 60 percent of the electricity used in Connecticut.

CE: So, while the power plants are significant generators of this type of waste, they're not the only generators.

KG: Besides, the four power plants, there are more than 20 other generators of low-level radioactive waste in Connecticut.

CE: How big a space are you going to need and why?

KG: One of our tasks is to estimate the volume of waste that would be generated over a period of time. For the 50-year life of the facility, the board of directors of the service anticipated Connecticut would need 9.5 million cubic feet of disposal space. The board is responsible for making the major decisions. It consists of six people, and I serve as chairwoman in addition to being executive officer. The five other people include two chemical engineers, a physicist, a Ph.D. chemist, and a practicing attorney. The board meets once a month and provides direction to

the 10-person staff on low-level radioactive waste management and hazardous waste management.

CE: The members are from different fields of expertise, different perspectives, and the idea is to come up with a balanced recommendation.

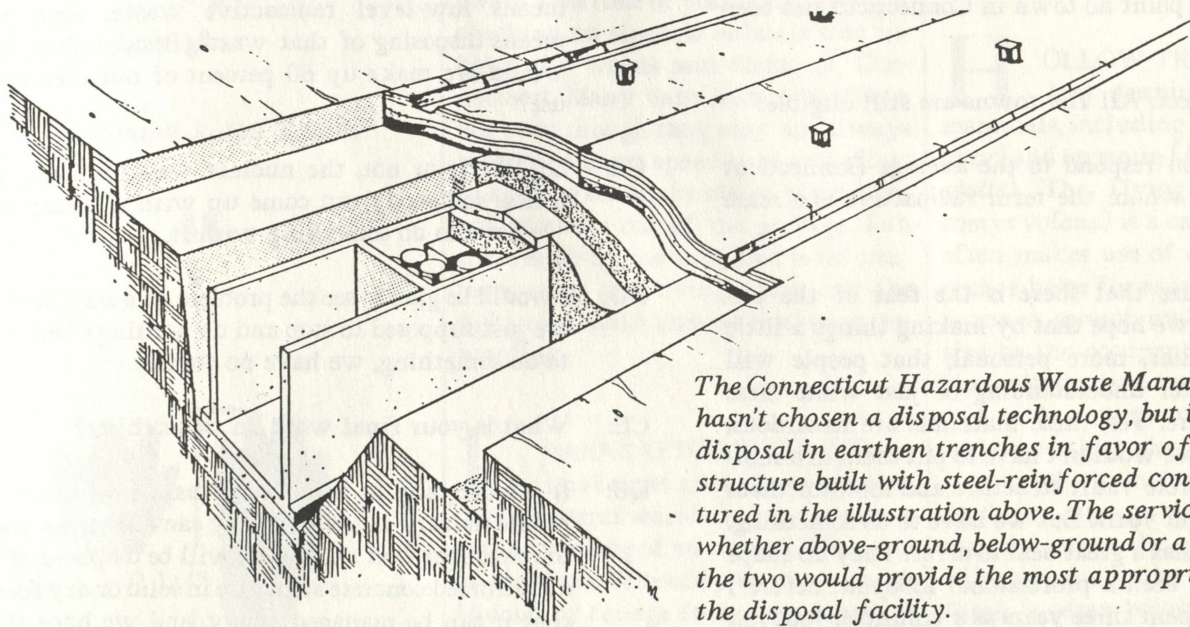
KG: Yes, and this is probably why the Legislature chose this body because it wasn't one person making a decision. Basically, it is a process that allows for public participation and representation of a broad range of views. The board consists of a representative from each of the Congressional Districts.

CE: Will the storage facility be built underground or above ground?

KG: That is to be decided, although as you know, here in Connecticut you don't have to go too far below the surface to reach ground water. Since the major goal of the program is to protect public health and the environment, you certainly don't want water intrusion. For that reason, there is a good possibility that the facility will be above grade. There are designs that provide a concrete structure above the grade that, when closed, will be covered with earth. The material that is disposed of in this facility will be solid or dry -- no liquids. People are very concerned about the transport and disposal of liquid. These materials are transported in solid and dry forms. So spills are not a major problem.

CE: The fact that it's in solid form is a further safety factor.

KG: Yes. The other thing that I like to tell people is that we're not talking about a lot of truck traffic. Peo-



The Connecticut Hazardous Waste Management Service hasn't chosen a disposal technology, but it has ruled out disposal in earthen trenches in favor of an engineered structure built with steel-reinforced concrete as is pictured in the illustration above. The service has to decide whether above-ground, below-ground or a combination of the two would provide the most appropriate design for the disposal facility.

ple think about municipal waste and trucks coming into that landfill. Here we're talking about an average of one truckload every three days.

CE: What are some of the criteria you will use when you look at sites?

KG: There are criteria already established by the federal government, the Nuclear Regulatory Commission, and state agencies like the DEP and the Connecticut Siting Council. And they include such things as prohibiting the disposal in a 100-year flood plain, in a coastal hazard zone, or in watershed areas.

CE: So, whenever a site is considered you will go through that list of possible red flags. The main goal is public safety and environment, isn't it?

KG: Yes. Basically, everything we will do — the selection of the site, the choice of technology, the safeguards that are built in — is aimed at protecting public safety.

CE: How are things going as far as that time schedule is concerned?

KG: By December 1990 we will choose three sites for in-depth study of groundwater, soils, the geology in general. That will take place for about six months on those three sites. One site will be chosen from among the three. Further in-depth study of that site will go on for another six months. We need about 250 acres. In a small state like Connecticut, finding that amount of land which fits all the criteria is not going to be an easy task.

CE: But at this point no town in Connecticut has been ruled out.

KG: That's correct. All 169 towns are still eligible.

CE: How do you respond to the average Connecticut citizen for whom the term radioactive is a scare word?

KG: We recognize that there is the fear of the unknown, so we hope that by making things a little more familiar, more personal, that people will have a better understanding of just what these materials are. Yes, these materials are hazardous, otherwise we wouldn't have to put them in a reinforced concrete vault structure and monitor them for years and years. But we have to do something. The public has a great deal to offer. They do shape things. I've been a professional lobbyist. Before I did that, I spent three years as a volunteer lobbyist with the League of Women Voters, lobbying for

the bottle bill in Connecticut. People can make a difference and our hope is that people will become informed, become interested, and participate.

CE: Suppose someone comes to you and says, "I want to keep right up to date on this, I want to find out what you're doing every step of the way."

KG: Probably the best way is to give our office a call at (203) 244-2007. We're located in Hartford and it's the Connecticut Hazardous Waste Management Service and we'll be happy to put them on our mailing list. Now approximately 4,000 people regularly get mailings from us. We start them off with a background packet of material — one page fact sheets that describe just what we've been doing.

CE: And you encourage that kind of public involvement?

KG: Absolutely. I firmly believe in public participation.

CE: What kind of arguments do you encounter against having the facility?

KG: Many people feel we just shouldn't have it here. Nobody wants it. If somebody else would take our waste, that would be wonderful, but we must act responsibly. I ask people to put themselves in the place of the people in South Carolina. Would they like to continue taking the waste? Some people have said, "Shut down the power plants since they're the major generators." But we need to point out that even in shutting down the power plants, it means decommissioning those plants and that means low-level radioactive waste. And that means disposing of that waste. Besides that, how would we make up 60 percent of our electricity use?

CE: So, like it or not, the nuclear waste is here, and unless somebody can come up with a better idea, we have to do something with it.

KG: I would be glad to see the problem go away. But are we just supposed to stop and do nothing? We have to do something, we have no choice.

CE: What is your final word on this subject?

KG: It is not going to be an easy task. I would urge people to learn as much as they can about the issue, to remember that this waste will be disposed of in a reinforced concrete structure in solid or dry form, that it can be managed safely, and we hope that people will participate in the process. ■



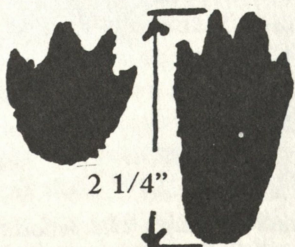
The prints of the cottontail rabbit are easy to distinguish; the two hind feet lead the way, with the two front feet slightly behind. (Photos: L.L. Rue)

Signs of Life

by
Penni Sharp



Cottontail Rabbit Tracks



AS WINTER draws to an end, the days lengthen and signs of new life appear. The hooded spathe of the skunk cabbage is evident in wet woodlands, pussy willows show themselves, and red maple buds begin to swell. This time of year is also good for checking on signs of animals that inhabit the woods and fields of Connecticut. Many have moved to suburbia, even though they may not always be welcome; we spend time and effort to keep woodchucks out of the garden and raccoons out of the garbage. But, there is joy in knowing that wild creatures share our living space, and the sight of a wild animal is always rewarding.

LEARNING TO RECOGNIZE animal signs adds the enjoyment of the natural world. One of the easiest is the dwelling of an animal. The nests of birds can be readily seen in winter. Hidden by foliage during the breeding season, they stand out in the bare

branches of winter trees and shrubs. One of the more interesting is the pendulous nest of the northern oriole (*Icterus galbula*). This nest is usually seen hanging from the branch tips of tall shade trees, typically elm or sugar maple. The gray, gourd-shaped nest is intricately woven with plant fibers, string, yarn, grasses, and bark. Another interesting nest is that of the yellow warbler (*Dendroica petechia*). This warbler often builds a nest with one or more false bottoms. These are constructed to cover, and thus leave unhatched, the egg of a cowbird which has been deposited in the warbler nest. Yellow warblers build their nests in forks of branches usually in small trees or shrubs near water or in a brushy marsh.

In addition to nests, other animal homes may be noted in late winter. A large burrow in an open field or at the edge of the woods is probably the home of a woodchuck (*Marmota monax*). Dug out the previous summer, the burrow may be four to five feet deep and up to 30 feet long. It leads to an underground chamber where the woodchuck spends the winter hibernating. Other animals whose homes may be burrows are fox, skunk, otter, and mink. Thus, location and size of the burrow are important in identifying the occupant.

HOLLOW TREES make excellent denning sites for some mammals, including raccoon (*Procyon lotor*) and opossum (*Didelphus marsupialis*). The flying squirrel (*Glaucomys volans*) is a cavity dweller and often makes use of abandoned woodpecker holes for access to the inside of a tree. A screech owl (*Otus asio*) may also be the occupant of a tree cavity. Not only do dead trees provide shelter to a wide variety of birds and mammals, but they also harbor numerous insects which, in turn, are a source of food for many birds. Woodpeckers usually create the openings in search of insects and grubs. Once the cavity is there, it often becomes the entryway to some animal's dwelling place.

Two animals whose homes are very noticeable are the beaver (*Castor canadensis*) and the muskrat (*Ondatra zibethica*). Both build large conical houses in water. A beaver lodge is fashioned of sticks and mud. On streams and rivers, beavers will construct elaborate dams, also of sticks and mud. A sure sign of a beaver's presence is a number of stumps of small trees etched with tooth marks.

A muskrat lodge, while similar in shape, is built of non-woody marsh vegetation. It is usually located within a marsh or at the edge of a pond. Both beaver and muskrat will also burrow into the banks of rivers and streams.

Another mammal whose presence may be noted along rivers and streams is the river otter (*Lutra canadensis*). Otters are playful animals, and perhaps the best clue to an otter's presence is a mud slide leading down a river bank. Otters also burrow into riverbanks. The entrance is usually below water.

SURE SIGNS of the presence of animals are tracks. These are best seen during winter and early spring either in fresh snow or mud. Almost certain to be noticed in Connecticut's woods and fields are the tracks of the white-tailed deer (*Odocoileus virginianus*). The deer's cloven hoof leaves a distinct pattern which cannot be mistaken for any other wild mammal in Connecticut. Through woods, deer tend to follow established game trails, and numerous tracks can be observed.

Another distinctive set of footprints belongs to the eastern cottontail rabbit (*Sylvilagus floridanus*). Cottontail tracks are usually found in brushy thickets, near weedy patches or at the edges of woods. The two hind feet lead the track with the front feet following singly behind. The print of the hind foot is about four inches long, while the front foot is an inch and a half or so.

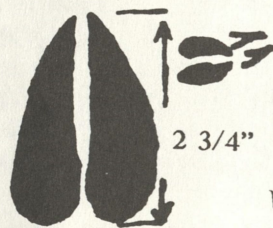
The tracks of the eastern grey squirrel (*Sciurus carolinensis*) can be

seen throughout Connecticut, in urban as well as suburban environments. In squirrel prints, the front feet are paired, with the larger hind feet of a bounding squirrel leading in the direction of the leap.

The tracks of the opossum are very distinctive. Each foot has five toes, and on the hind feet, the inside toe is opposable. This aids the 'possum in tree-climbing.

By going out and examining tracks after a light snowfall or in the mud of

a winter thaw, one can play at being a detective. Sometimes there is a story to be told in the imprints left behind. A pile of feathers next to a scuffed-up place in the snow may be the locale where a fox pounced upon an unsuspecting grouse. Not all tracks reveal dramatic events; however, they will allow one to speculate upon what species of animal may have travelled that way, what direction it was headed, and what was the purpose of the journey.



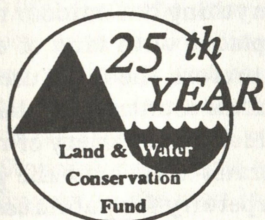
White-tailed Deer Tracks



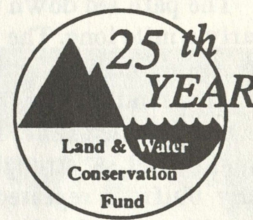
Connecticut's white-tailed deer follow game trails through the woods. The cloven print is unmistakable.



*The gazebo in Center Park, Wallingford. Brick sidewalks and wrought iron benches reflect back to the Victorian Era.
(Photo: Tom O'Brien)*



Highlights of the LWCF Program



by
Judith D. Prill
Program Coordinator
State Outdoor Recreation Fund
and
William I. Sharp
Program Manager
National Park Service

COME ALONG WITH US. We are going to take you on a quick tour of some of Connecticut's recreation and open space resources; each is unique and well worth a visit.

We work on a very special program, the Land and Water Conservation Fund (LWCF) that has provided much of the funding for protecting these areas and allowing the public to use them. The LWCF is administered by the DEP at the state level and by the National Park Service at the federal level. The LWCF, as part of the State Outdoor Recreation Fund, provides assistance for the acquisition and development of public park and open space areas.

You may be thinking, "Who cares?" However, if the protection of open space, access to Long Island Sound, or your local community park means something to you, you may just want to read on. And you might find it interesting that the LWCF program has provided more than \$52 million for outdoor recreation in Connecticut, funding over 340 projects state-wide.

A typical day for us administering these programs means processing paperwork, attending meetings, and providing technical assistance to municipalities over the telephone from our stuffy city offices. Fortunately, the LWCF program regulations mandate that the project areas be inspected periodically to insure the sites are open and available to the public and that other requirements are being met.

So, to honor the upcoming 25th anniversary of the LWCF — one of our nation's most effective recreation and conservation programs — and to show our pride in what LWCF and state funding have done for Connecticut, we invite you to enjoy these highlights of our November inspection tour of some special projects.

Day One: Wednesday, November 15, 1989.

Bluff Point Coastal Reserve, Groton. Bundling up to face the wind, we started out on the flat path bounded on one side by tidal grasses and on the other by a wooded knoll. The wind wasn't so bad, as the path led through the wooded area criss-crossed by stone walls and engulfed by bull briar and bittersweet vines. We searched through the briars for the site of former Governor Winthrop's house, built in the 1600s. We found a strange configuration of stones and couldn't decide if it was the site. It was so isolated — with just the sound of the wind through the



Short Beach Park, Stratford. In 1988, this area was singled out for a Take Pride in America award. (Photo: Judith Prill)

trees. We wondered what it was like to live here over 300 years ago, with the only available transportation by boat, horse, or foot.

The path led down the knoll to a coarse sandy beach, nearly a mile long. The winds whipping across the beach and water made it easy to realize why the governor sought inland shelter for his house. We continued on to the aptly-named Bluff Point and stood overlooking Long Island Sound. A strong wind dashed waves against the rocky bluff in repeated showers of spray. The natural rugged beauty of the area was indeed impressive. Originally proposed for acquisition as a state recreation facility in 1914, it wasn't until 50 years later that the first parcel was secured under public ownership. The 778-acre area was completed in 1977 when the LWCF program helped purchase the major portion of the acreage.

Day Two: Thursday, November 16, 1989.

Short Beach Park, Stratford. Umbrellas were useless in the blustery rain at Stratford. We braced ourselves against the wind, water, and cold and headed for the shore. The normally gentle waves in this protected section of Long Island Sound had given way to huge breakers. Six surfers taking advantage of the action reinforced our belief in the value of providing public outdoor recreation resources, particularly for water access. People want to make use of the outdoors, even in what many consider to be miserable weather.

Short Beach Park, once a landfill, is now a popular coastal recreation area. In fact, it received a 1988 *Take Pride in America* award from President Bush for the dramatic work done in turning the area into a valuable park resource. It was the only award in Connecticut and one of 103 such awards throughout the country.

In 1986 the Town of Stratford received a grant of \$75,000 in LWCF and state dollars for the development of

access roads, a parking area, signage, and landscaping at the 107-acre Short Beach Park. The park includes recreation facilities, natural dune areas and nesting ground for the piping plover, a migratory shorebird that is a federally protected species.

Woodtick Recreation Area, Wolcott. The grey November day continued as we drove towards Wolcott. Coming around a wet, slippery corner, we passed the Woodtick Reservoir and dam. As a result of the torrential rains, the water flowing over the dam was very high. Across the lake we could see the beach and the new playground equipment. The bright metal playground structure offered the only color in sight. In spite of the weather, it was clear that the wooded 334-acre site that includes two lakes is a very desirable place to play, swim, lie on the beach, spend a few tranquil moments on the water, or walk a trail.

The Woodtick Recreation Area is an unusual grant project. The town of Wolcott originally received a grant in 1974 to acquire the Chase Country Club. In 1986, 32 acres of the country club were sold. The grant program guidelines do not allow areas acquired or developed with their assistance to be used for anything but outdoor recreation, unless those areas are replaced with land of equal or greater fair market value. Therefore, the town used the proceeds from the sale of the excess country club land to purchase the Woodtick Area which has a variety of recreational uses. This project illustrates well how the grant programs can protect land in perpetuity for public use and yet remain flexible to best serve a community's needs.

Before leaving, we stopped to admire the new handicapped accessible playground equipment that was installed as part of a recent recreation grant from the state.

Valley Railroad, Essex. Still raining as we pulled into the parking lot of the Valley Railroad Station. An old locomotive attached to a flatbed car loaded with rows of plastic Christmas carolers greeted us. Hundreds of Christmas lights were strung up on the train, lamp posts, and buildings, just in time for the holiday season. We learned that almost 15 percent of the scenic train riders come during late November and in December. Approximately 20,000 people arrive each year to ride the North Pole Express, along with Santa and Mrs. Claus and their elves. Visitors enjoy a relaxing ride on an authentic steam train, traveling past meadows and forests and along the majestic Connecticut River. From May through October, a riverboat cruise is available in conjunction with the train ride. The boat departs from the train stop in Deep River.

We ran through the rain to the engine house. As we stepped inside, a steam locomotive under repair loomed above us like a shining black giant. This working relic of days gone by certainly made an impression on us.

The state of Connecticut decided to acquire the railroad line in 1969, years before the idea of linear parks had caught on. Three hundred acres from Middletown to Old Saybrook were purchased and protected in perpetuity us-

ing LWCF assistance. The Valley Railroad Company leases this land from the DEP for its steam train operation. The percentage of the income generated which the state of Connecticut receives helps maintain its park facilities statewide.

Day Three: Friday, November 17, 1989.

Wallingford Center Park, Wallingford. Walking through downtown Wallingford, we noticed an old photo of Center Park in a camera shop window. It focused on an attractive gazebo surrounded by shade trees. If it were not for the Model-T car, it would have been hard to tell that the photograph was from 1915. The new gazebo, which we could see from where we were standing, closely resembles the structure that had stood there at the turn of the century. In fact, the entire park design, with brick sidewalks and ornate wrought iron benches, reflected the Victorian era of the Wallingford Railroad Station and the surrounding commercial district.

The restoration, completed in 1987, was achieved through the combined efforts of the town of Wallingford, numerous citizens, the private business community, and \$100,000 from the state of Connecticut and LWCF. The project, with the Wallingford Beautification Committee, helped initiate a comprehensive revitalization program for the entire downtown area and several nearby buildings have already been renovated.

Stopping in a local coffee shop to warm up before heading on to the next inspection, we sensed a feeling of civic pride among the patrons, a sense that downtown Wallingford was alive and improving. We were glad we had a part in it by helping restore Center Park.

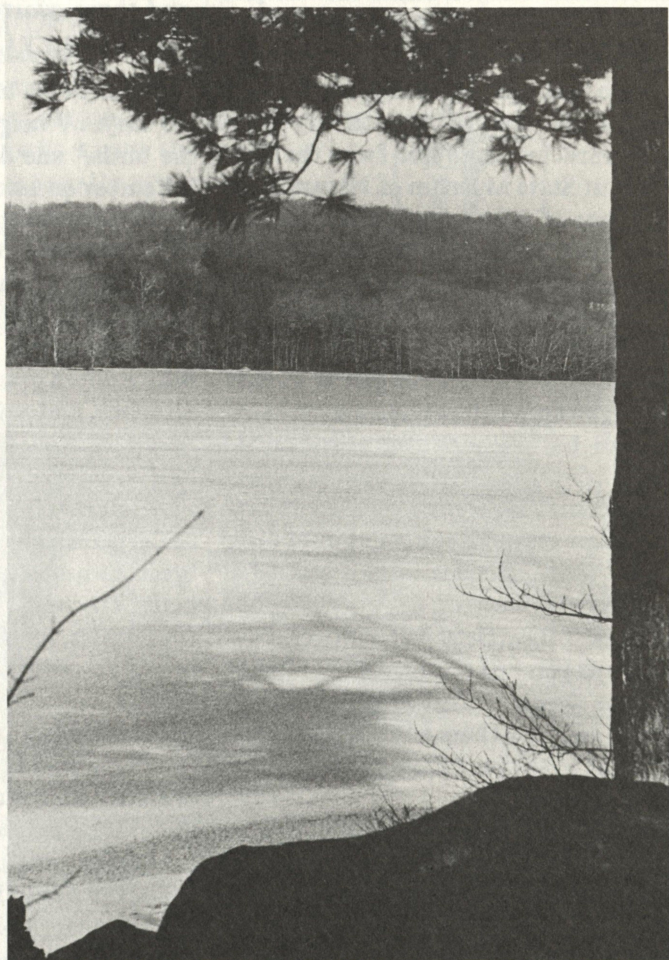
Roaring Brook Falls, Cheshire. Climbing the steep winding path through a grove of hemlocks, we both realized how soft we had become working in our city offices. The cold crisp air felt great and the sun streaking through the trees was a welcome relief from the gloom of the day before. As we got closer to the ravine, the roar of the waterfall grew louder until we had to shout to hear each other. The 60-foot drop of the falls was a spectacular sight, especially since the rains had left the brook swollen.

Roaring Brook Falls is an 85-acre site owned by the town of Cheshire, purchased with assistance from the LWCF and the state grant program. Just a short walk into the area takes you to a kind of wilderness area, closing out the reality of the surrounding suburban development in a rapidly growing area of the state. The setting is spectacular and the views from the top of the ridge are dramatic. Setting the self-timer on the camera, we tried to capture ourselves and the beauty of the area in a photograph. Scrambling into place before the shutter clicked, we narrowly avoided slipping on the wet leaves and tumbling into the ravine below. What a dramatic end that would have been to our inspection trip.

Three days on the road has given us a greater appreciation of how valuable the LWCF program has been over its

25-year history. We return to our city offices, pleased about the impact of our jobs on the quality of life in Connecticut.

SINCE 1965, FUNDING FOR LWCF GRANTS has averaged \$125 million per year nationwide. Revenues for the LWCF are derived from three main sources: the sale of federal surplus real property, a portion of federal motorboat fuel taxes, and Outer Continental Shelf revenues, derived from leasing of oil and gas sites in coastal waters. Recent annual appropriations are significantly below average; less than \$17 million in fiscal years 1988 and 1989. The United States Congress is currently considering House Bill 876 (Udall) and Senate Bill 370 (Chafee). Known as the American Heritage Trust, these bills would establish a secure true trust fund that would eventually grow to a corpus of \$10 billion. Also being considered is Senate Bill 684 (Johnston) that would fund the LWCF Program with revenues from the Alaskan National Wildlife Refuge oil leases. For more information regarding this legislation, please contact Senators Dodd or Lieberman, your congressional representative, or the Northeast Service Center of the National Park and Recreation Association (721-1055). ■



Woodtick Reservoir, Wolcott. This 334 acre site is an excellent place to spend a few tranquil moments. (Photo: Tom O'Brien)

Hearing the Birds Again

by
Carol Davidge

NEVER IN MY LIFE did I expect to become a bird watcher. It happened last August, when I first saw a great blue heron on Eastford's beaver pond. The bird lifting awkwardly off the water, transformed into a huge, magnificent bird in flight, landing almost as awkwardly as an albatross. I knew I had to see more. Binoculars were ordered. But despite many trips to the beaver pond, I never again saw the heron.

To assuage my disappointment, I decided to watch birds in my own back yard. I ordered seed from the Connecticut State Museum of Natural History, one of many nonprofit organizations that participate in the bird seed sale day where high-quality, low-cost seeds are available in bulk.

Starting early, I hoped to persuade some of the prettier songbirds to stay through the winter. The first week 35 goldfinches and pine siskins consumed seven pounds of thistle seed. At a dollar a pound, I figured when the real cold came my pocket book would have given out. Besides, the beautiful goldfinches weren't very nice to one another — they flew like kamikazi's at the birds perched on the feeder, scaring off the weak-willed and gaining an eating spot for themselves. "Do I really want to support these birds?" I pondered.

"Aren't you expecting the birds to be polite, like humans?" asked a friend. "They're only birds being birds," she observed.

I talked with Winnie Burkett, the Museum's naturalist. "Many people would love to have goldfinches," she said. "You are probably getting such



Black-capped chickadee (Parus atricapillus), four and three-quarters to five and three-quarters inches long, eating sunflower seeds from author's hand. (Photo: Garry Clifford)

large numbers because not many people in your neighborhood are feeding the birds," she decided. As the coldest December on record descended upon us, my neighbors apparently put out feeders because thistle consumption dropped to reasonable levels.

Within a few weeks there was a colorful influx of birds: black and white downy woodpeckers — females all black and white, males with a red spot at the back of their heads — and half-a dozen red-breasted nuthatches, tiny blue-grey birds with rusty red underparts. There were also a white-breasted nuthatch, a dozen red-headed house-finches, four perky titmice, four pairs of shy cardinals, juncos, bluejays, starlings, and, of course, dozens of friendly black-capped chickadees.

"You're very lucky to have red-breasted nuthatches," said Dr. James Slater, the former state ornithologist. It was Slater who started my bird adventures by noting in his book about Connecticut gravestones that there were kingfishers in the beaver pond across from Eastford's old cemetery.

"If you're very patient," he said, "the nuthatches will come right up to

you." Dr. Slater mentioned that sometimes intervals of six years passed between visits to his country home by red-breasted nuthatches. "Your pine trees probably attract them," he added.

Long ago someone told me that chickadees ate out of her hand. And, because the red-breasted nuthatches were among my favorite birds, I decided to try being patient. Braving the December cold, I positioned myself with my back to the tree trunk and extended my hand along a branch. Holding sunflower seed, I stood absolutely still, not even moving my eyes, hoping to fool the birds into thinking I was part of the tree.

After many minutes, nearing frostbite in the fingertips, I heard little chirps and, around my head, the tiny brushing sound which I realized must be the wings of small birds. Whish! A chickadee landed on a near branch, hopped into the middle of the seed in my hand, chose one seed, and flew away with it. The chickadee had been so dainty that I hadn't felt its feet or beak.

The next day, the chickadee clung to the tips of my fingers as it chose a morsel. This time I could feel its tiny

feet but found it hard to imagine that a five-inch bird could feel weightless.

The third morning, a red-breasted nuthatch landed in my hand. Like a little tornado, it tossed the seed around. Its long, narrow beak tweaked my palm. Its little feet jumped hither and thither. After discarding dozens of seeds, the four and one-half inch nuthatch chose one large sunflower heart and flew away. During the next five minutes, the nuthatch came twice again.

In the weeks that followed, chickadees, nuthatches, and pine siskins randomly appeared at my hand. Titmice fussed overhead. Woodpeckers flew to nearby branches. Cardinals stayed distant. Juncos approached on the ground, slowly hopping out of the underbrush to nibble seed around my feet, chirping and reminding me of feeding chickens at my grandmother's farm in Kansas. Some days, no birds ate from my hand; on others, perhaps a dozen birds would sample my offering.

As the coldest December on record progressed, hundreds of birds ate food tossed onto the snow-covered ground. The guides said only one pair of woodpeckers would be seen, but because the suet in my yard is at the border of two woodpecker territories, there are two pairs, one sometimes patiently waiting till the first finishes eating. One day 30 doves dropped out of the sky, ate, and flew away.

One day the fringe tree was covered with color — flickering reds, yellows, blues, blacks, and whites. "No Christmas tree could be more beautiful," I decided.

Observing the birds through my new binoculars from the warmth of my kitchen, I realized how little I understood. The male cardinals, it seemed to me, rarely got a bite to eat because they were too jittery to stay long enough on the ground to find anything. And, despite hours of studying the Peterson, Audubon, and Stokes guides, it is clear that I may never correctly identify the various sparrows.

Not only birds revealed interesting behaviors; with a six-inch snow cover, each of four neighborhood cats made

distinct trails across the yard as they made their rounds. Previously, I had been unaware of cats in our yard. I co-opted the only cat that seemed interested in the birds by feeding him far from the bird feeders.

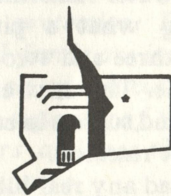
Squirrels are unavoidable, but they seem intimidated by the constant presence of cats. Raccoons, however, are unbeatable. Day after day, all the suet would disappear from the trees. Small tidbits placed on tiny, high twigs, far from solid footing or sturdy branches, might last several days, but this meant making small suet bags and almost daily replenishment. And occasionally the raccoons rip the feeders off limbs or chew on the feeders, scattering seeds and feeder parts around the yard.

Then the hawk arrived. First I noticed the woodpecker clinging absolutely motionless to the bottom of a branch. Was he asleep? Or was this the courtship behavior described in Stokes *Bird Behavior*? Frequently, all the birds would fly away, staying away for long periods. "Hawks know that feeders attract birds, especially weaker birds, because food is easier to find at feeders," explained Winnie. "The

hawks catch birds that aren't alert," she said. "Don't be distressed — it's nature's way of keeping the species strong," she said.

When the January thaw arrived, the snow melted and half of the birds disappeared. "No, they haven't died suddenly," said Winnie. "Since the snow cover is gone, they've just returned to their usual sources of food."

Soon these birds will choose mates and start families, singing new songs, sometimes awakening me at four a.m. Migrating birds will return to Connecticut or pass through. My yard is not the place for a bluebird house, but there's a farm over the hill that would be perfect. A woman who tests people's hearing told me that, after a client receives a hearing aid, the first thing they tell here is that they can hear the birds sing. As I stand immobile under my fringe tree, I have a small sense of what that must mean.



Squirrel enjoying food intended for birds. (Photo: Marion Rettenmeyer)

Preparation is Everything

by
Alan Levere

PREPARATION is one of the ways to distinguish the serious fisherman from the weekender. It is the difference between having your tackle ready to go at any time and throwing your stuff together the morning of the fishing day.

But regardless of when or how your equipment is prepared, one of the things that remains necessary is information about your destination. Knowing the location of the deep holes and shallow spots in a pond is as important to the fresh water fisherman as a batter knowing what a pitcher will throw on a three and two count in a baseball game. The answer is in the homework, and success in each case depends on past research.

I never had any real luck figuring out pitchers, but for anyone who will be fishing this year on Connecticut lakes, we have something that can tell you more about the variety of lake depths.

The key is our *Guide to 73 Lakes and Ponds of Connecticut*. It features such specific information as water surface area, access directions, parking capacity, a briefing on regulations such as whether or not power boating is allowed (nice information if you are canoeing), conditions such as overabundance of weeds, shallow or unimproved launch conditions, and most importantly, which types of fish inhabit the waters.

One of the main reasons the *Guide* was our most popular publication last year is the full page map (eight and one-half inches by 11 inches) for each lake. These maps reveal the depths and the bottom contour of each water body. So, there are no secrets as to the locations of those deep spots and shal-

low areas. It puts you on almost equal ground with the competition that might be using depth finders. *Guide to Lakes and Ponds of Connecticut* is spiral-bound for easy use; \$4.65 is the price.

MY FIRST CHOICE for locating all these lakes in the state is our own *State Base Map*. This \$5.00, multi-color map measures 44 inches by 55 inches. It has all the towns distinctly outlined in gray so they stand out easily. Of course, the prime color for water body identification is blue, and you will find it in the more than 200 lakes, ponds, and reservoirs that are depicted. Though you will still need a local map to get you around town, this map offers a great statewide perspective.

IF YOU REALLY ARE AFTER specifics, we also offer two different sets of detailed lake maps. Each is printed on a 14-inch by 18-inch sheet. The water body is depicted in varying shades of blue, where the dark blue in the deep water graduates to light blue in the shallow.

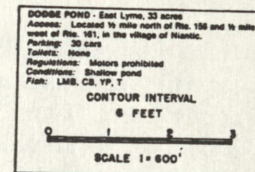
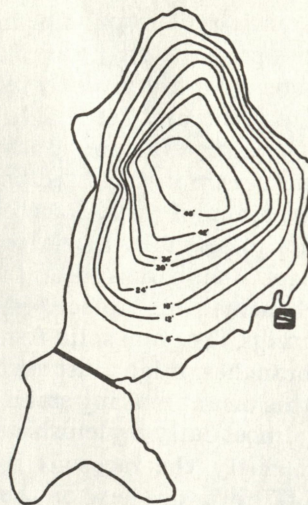
Stream inflows and outflows show areas of mixing where fish might be feeding. Other information includes water quality, dissolved oxy-

gen, pH levels, alkalinity, acidity, and areas heavy with aquatic vegetation. Graphs of temperature and dissolved oxygen help show the depth below which fish cannot survive. The local named roads combine with the boat launches and picnic areas to make it a breeze to get to these locations. In all, the wealth of information can be invaluable.

The two lake map sets are: the East Group, which includes Bashan and Cedar Lakes, Mashapaug and Pachaug Ponds and Mansfield Hollow; and the West group, which includes Beseck, Squantz and Mudge Ponds, and Warmaug and Winchester Lakes. Each set is \$5.00. Recent additions of Breakneck Pond and West Thompson Dam can be ordered for an additional dollar per sheet when you order either set.

WE WOULD LIKE TO THINK that the information described here will help you get better results on your first day out. And with fishing season opening on April 21, no matter who you are, you still have plenty of time to prepare.

To order, please include \$2.00 for shipping and handling per order and eight percent Connecticut sales tax. Our address is: DEP-NRC, Map Sales, Room 555, 165 Capitol Ave., Hartford, CT 06106.



Dodge Pond, from "A Guide to Lakes and Ponds."

Major Report from CEQ

Connecticut must adopt innovative methods for raising revenue in order to adequately protect its environment and natural resources, the Council on Environmental Quality (CEQ) said in its annual report to the Governor, released on January 29, 1990.

The DEP will require at least 20 million additional dollars in its annual budget to fulfill all of its responsibilities, the Council concludes. The state currently budgets approximately \$55 million (about three quarters of one percent of overall state spending) for the DEP, though that amount is threatened by across-the-board budget cuts.

"Without the increase," said Gregory A. Sharp of Northford, who chairs the Council, "many important state environmental laws will be unenforced, and the protection of our natural resources will deteriorate."

"The current state budget problems make our recommendations even more urgent," Sharp continued. "Unless the Legislature approves some new funding sources for the DEP, Connecticut's environment will suffer."

According to the Council's report, the state DEP does not have enough staff to enforce the laws passed by the Legislature in the 1970s and 1980s. Of direct taxes that the typical Connecticut citizens pays to the state each year, about five dollars goes to environmental protection, considerably less than in other northeastern states.

"The increase need not come all in one year," said Sharp, "and much of the increase can come from sources other than the taxpayer. There is great potential for supporting certain programs entirely with fees, such as application fees for pollution discharge permits."

Sharp stressed that such fees would do little to solve the state's environmental problems unless the rev-

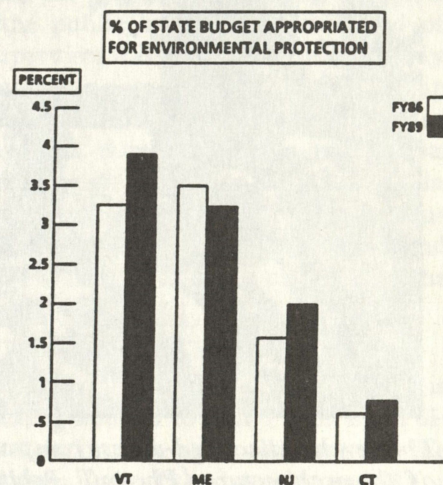
enue is dedicated to the DEP budget. At present, permit fees paid by industries go to the general fund. Because the DEP receives no budgetary return from the fees, the agency cannot afford to reassign staff from permit and enforcement functions to collecting the fees owed to it, or implementing new fees that have already been authorized."

To assess the extent to which the state DEP is understaffed, the Council identified all of the mandatory responsibilities assigned to it by the Legislature since 1971. The Council analyzed the number of environmental personnel that would have been needed to fulfill those responsibilities, and the number that were actually made available to the DEP.

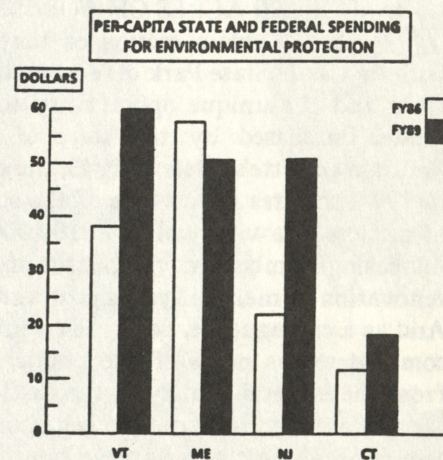
The Council found that the DEP has 693 full-time state-funded employees, while it needs a total of 1,011 to do everything the Legislature has demanded of it. As a result, the Council concluded, some environmental mandates are not being fulfilled, and some others are being implemented inadequately.

The Council's report also summarizes major environmental trends in Connecticut — the state's annual environmental "report card." The Council reports continued, gradual improvement in air quality as well as in water quality in lakes and streams. A few wildlife species, including piping plovers, bald eagles, and wild turkeys, showed dramatic improvement, while the black duck continued its long decline. Problem areas include an increase in beach closings in 1989, and a continuing loss of agricultural land, despite advances in the agricultural preservation program.

The Council on Environmental Quality is a nine-member advisory board appointed by the governor and General Assembly leaders to advise the state on environmental matters.



Percent of State Spending: This graph represents the percent of the state budget which is spent on environmental protection. Both general and special funds are included in the calculations. Connecticut's percentage is less than a quarter of the New England leaders' and less than one half of New Jersey's.



Per-Capita State Environmental Spending: Per-capita state environmental spending was calculated from a total of general and special funds. Again, Connecticut's per-capita expenditure for the environment is less than one half of New Jersey's and even further behind Vermont's and Maine's.



The new handicapped-access ramp at Gillette Castle was designed specifically to harmonize with the unique character of the architecture. (Photo: T. Robinson)

New Access Ramp at Gillette Castle

by
Thomas A. Robinson
Environmental Intern

A TOP 190 ACRES OF FORESTLAND, along the East Haddam section of the Connecticut River, Gillette Castle State Park offers spectacular views of the river and the unique opportunity to explore a modern castle. Purchased by the state of Connecticut from William Gillette's estate in 1943, and opened to the public in 1944, the area is now one of the state's largest tourist attractions, drawing well over 100,000 visitors each year. Increasing numbers of visitors has meant expansion and renovation of many physical structures within the park. And as a consequence, park management has tried to accommodate the needs of the public without detracting from the esthetic quality of the castle.

Recently, construction began on a handicapped access ramp along the eastern section of the castle. When first proposed, the project threatened to detract from the esthetics of the castle. Now, as work nears completion, fears have subsided. Not only has the access ramp combined beauty and function but, by being consistent with the unique architectural vision of William Gillette, it has been a source of satisfaction to the park and even the construction crew.

Gillette Castle State Park offers a host of recreational options. For daytrippers, picnic tables and benches

abound. Whether along the tree lined paths within the interior of the park or along the rocky ledges bordering the river, the visitor can take refuge in the shade of the evergreens and enjoy the view. Over three miles of hiking trails exist for the casual walker or, in winter, the cross country skier. And for those more daring, primitive canoe-camping sites are available along the shore at Gillette Castle, Hurd and Selden Neck State Parks. Prior arrangements to canoe camp must be made.

But, what attracts most people, says Park Supervisor Donald Grant, is the "castle" itself. Designed and built between 1914 and 1919 by William Gillette, a native of the Nook Farm section of Hartford, and most famous for his acting role as Sherlock Holmes, the structure is described by Grant as "pure Gillette." Though some have suggested that William Gillette tried to duplicate a German castle, it is more likely that the castle is instead the physical manifestation of the dreams and interests of a theatrical and mechanical genius.

The castle's exterior and interior reflect the intense creativity of William Gillette. With its many side entrances and exits, balcony, peculiar selection of furniture, props and eerie lighting, the living room resembles more a stage set than a family room. Support beams are not polished or intricately carved. Instead, these cross sections display carved "nuts and bolts," representing another attempt to retain a theatrical flavor. Above all, it was Gillette's purposeful attempt to combine function with beauty which distinguishes this peculiar landmark as so extraordinary.

AMONG HIS MANY IDIOSYNCRASIES and interests, though, Gillette's fascination with gadgets is perhaps the most compelling. Each locking device has its own particular design (the liquor cabinet houses one of his most prized locks). Besides various devices within the castle, Gillette's interest in engines and mechanics is represented by the construction of a system of tracks, bridges, and trestles, where he could ride his narrow gauge railroad cars. (Though the actual tracks have been removed from the park, the paths have been preserved as walking trails).

Gillette had always expressed concern about the future of his property and left his executors with the duty "to see to it that the property did not fall into the hands of some blithering saphead who has no conception of where he is or with what surrounded." With hopes of respecting Gillette's wishes, the state purchased the land from the executors in 1943 and have preserved not only the physical elements of the castle but the spirit of Gillette. Two years ago, however, proposals for the creation of handicapped access ramps to the castle were suggested. While the ramps would have allowed citizens with physical disabilities to use wheelchairs to reach the castle and enjoy the views, concerns were expressed that this type of addition would threaten this spirit of Gillette which the state has preserved.

Beginning in April 1989, the construction firm of GESCO, Inc., of New Hartford began their task of implementing the designs of architect Roderick Hartung. The firm, led by Paul Eseppi and Peter Gavrilien, who had done renovations to the castle in 1983, is quite familiar with the castle, and is confident in its ability to respect Gillette's intentions. With this commitment, Hartung, Grant, Paul Eseppi, Peter Gavrilien, and DEP Project Manager Thomas Smith have contributed to the castle an addition which not only benefits disabled visitors to the park but provides an aesthetic attraction for all visitors.

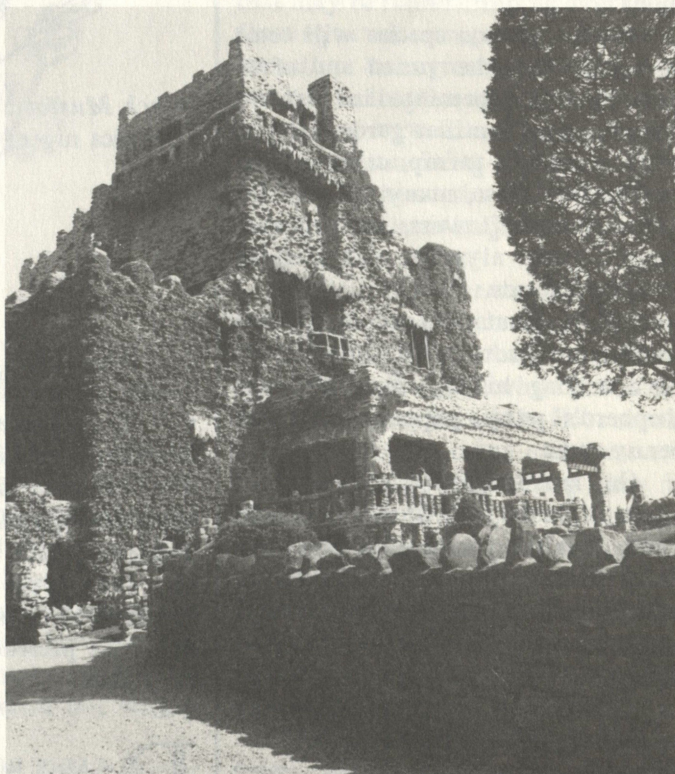
The first priority of the team was to use stone which would match the type used in 1919. To this end, 100 tons of fieldstone (virtually indistinguishable from the original stone, according to Eseppi) were purchased from a Colchester firm. In addition to the required metal tubular handrails along the ramp, cedar components have been incorporated into the design which reflect an architectural element used extensively throughout the castle grounds. Red cedar trees were a must, says Eseppi. For not only is the tree found in abundance in the park, but was used by Gillette along several walkways, and in his "Grand Central Station," (a stone and wooden structure which still exists, where guests once arrived from jaunts on his miniature trains). In addition, plans included several flower gardens along the sides of the ramp. This theme is consistent too, with the dozens of flower beds located on the castle's southern terrace which marks the destination of the new ramp.

For Eseppi, the project has been one of true enjoyment and satisfaction. A 40-year veteran of the construction business, Eseppi has worked for larger firms and on

larger scaled projects, but claims that working with just one partner and several assistants and on such a unique site as Gillette Castle has distinguished this project from his other experiences. The close personal contact combined with the common purpose of working to respect the wishes of Gillette have been the inspiration for the success of this project.

Although the color for handicapped handrails has not yet been decided, the project is essentially complete and was open to the public by the first weekend of November. Park Supervisor Donald Grant is anxiously awaiting a "ribbon-cutting ceremony" for the ramp which will be scheduled this spring. Grant is delighted with the project and the Bureau of parks and Forests future plans for a new visitor center and small scale train museum in Gillette's original roundhouse. Other plans include enlargement of the park's concession stand, and paving the walkway which leads to the castle from the visitor parking lot.

Gillette Castle is located in Lyme, Connecticut, and is easily reached by taking Route 9 to Exit 7 (Rte. 82). Following Route 82, watch for park signs. Admission to the Castle is \$.50 for children under 12 and seniors, and \$1 for adults. Guided tours of the castle are available daily between Memorial Day and Columbus Day, but only on weekends for the remainder of the year. The castle also features a Victorian Christmas celebration on weekends from Thanksgiving through Christmas with period decor and entertainment. The park grounds are open to the public daily year round with no charge. ■



The castle's exterior and interior reflect the intense creativity of William Gillette. (DEP file photo)

Meet the Mustard Family

by
Gale W. Carter
Illustrations by
Caryn Furbush

FIELD RECOGNITION of the mustards is easy at the family level because the flowers have four petals arranged to form a cross. Hence, the family name, *Cruciferae*. However, identification below the family can be difficult. The arrangement of the seed leaves (cotyledons) within the seed may be the key to identifying some species; nevertheless, a substantial number of species can be recognized by examining the flower, seed pods, seeds, and the presence of plant hairs (star-shaped or forked are common).

Many common species will come to mind from the varied and often showy group. Represented in this family are many familiar garden plants, such as radish, turnip, cabbage, and cauliflower. Also, many old and familiar garden flowers, such as candytuft, sweet alyssum, and honesty are all mustards.

Many mustards are considered weeds that grow wild. They often have a long history. Examples are shepherd's purse, pepper grass, and penny cress.

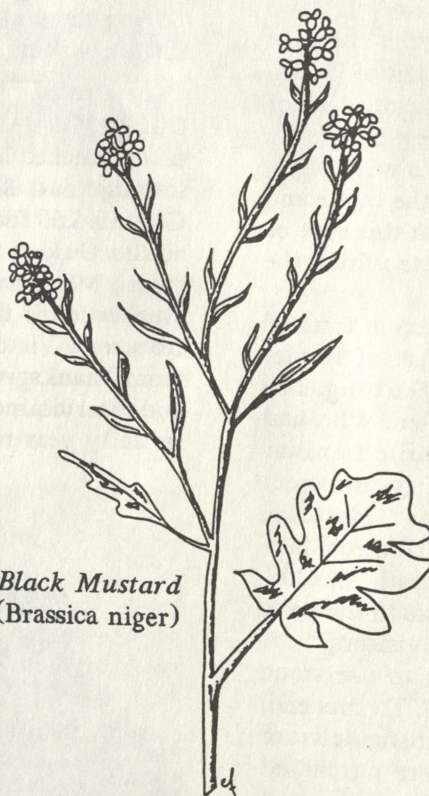
One mustard that is of special interest in history is woad, or dyer's weed. It is the source of a blue dye. Early Britons decorated their bodies with this dye to scare off their enemies and to heal their wounds.

General Characteristics of Mustards

- Flowers typically are terminal racemes, a raceme being an extended

flower cluster arranged along a stem, with each individual flower having its own stalk.

- There are four petals that are often showy. They are usually white or yellow, but in some species may be rose, purple, or some other color.
- The calyx is made up of four separate green sepals. Because they overlap, they give the appearance of being united.
- There is a single pistil that has a superior ovary with two chambers.



Black Mustard
(*Brassica niger*)

- There are six stamens, two of which are shorter than the others.
- The styles are short or absent and there are two stigmas.
- The fruit is a pod, which in some species is long and slender (silique) or, in other species, short and round (silicle). Both types split open into two halves when ripe.
- The presence of a watery, peppery juice.

DAMES' ROCKET or mother-of-the-evening (*Hesperis matronalis*) is a tall plant that grows up

to three feet in height. It may have either a single stem or it may branch near the top. Often, it is confused with garden phlox, but its flower has only four petals, while phlox has five.

The leaves are lance shaped and toothed. Its lower leaves are large and taper at the base into a short stalk, while the upper leaves are small and less likely to be stalked.

Flowers of dames' rocket appear as a terminal raceme. They are much showier than the typical mustard flower and the petals are larger (3/4 to one inch). These may be white, pink, or purple. Its stamens, style, and stigma lie deep within the flower. The stigma develops a sharp beak at maturity. Flowers at the bottom of the raceme open first, followed by others that develop above them as the stem grows in length. Blossoming time for dames' rocket is from May to August.

The pod-like fruit is long and slender and may be up to five inches in length. It develops constrictions between the seeds as they ripen.

Once a native of Asia and Europe, dames' rocket has long been a familiar old-fashioned garden plant. It was introduced into America and has spread to the wild where it has become naturalized.

Common habitats are roadsides, open woods, along fence rows, and around abandoned home sites.

The genus name *Hesperis* is the Latin word used by a famous naturalist, Pliny, in naming this plant. The word means "pertaining to the evening." It was chosen in recognition of the increased fragrance of the flower during the evening. *Matronale*, the species name, comes from *matrona* meaning "a lady, wife, or matron."

BLACK MUSTARD (*Brassica niger*) is a tall (three to six feet), strongly branched plant with a stem that is usually somewhat hairy. Its leaves are highly variable, often

with the presence of stiff bristly hairs. The lower leaves are deeply lobed with the terminal lobes larger than the others, while the upper leaves are lance-shaped, sometimes toothed and not lobed.

Flowers of black mustard are bright yellow and are clustered at the top of the stem in an open raceme. The four petals are about one half inch wide. The single pistil greatly exceeds the length of the six stamens. This is an adaptation for cross-pollination. Blossoming time is from May to September.

The fruit appears from June to October. The pods are erect and pressed against the stem. They are one half to three fourths of an inch long, with a short beak. Its seeds are dark brown to black.

Black mustard is a plant of fields and waste places. The genus name *Brassica* is the Latin name for the cabbage. *Niger* is Latin for black. This describes the shiny seeds of this mustard.

The word "mustard" comes from two words, the French word *moutarde*, and a Latin word *mustum*, meaning "must." Must is new grape juice before it ferments. Ground mustard seeds were mixed with must in making mustard.

The most interesting thing about black mustard is its many uses dating back to ancient times. Its buds and leaves are very high in vitamins and trace elements, making it a desirable food when used raw in a salad or cooked as a pot herb. The seeds are an important part of table mustard. As a medicine, it has been used in many ways. It has long been valuable for making the mustard plaster. This is helpful in treating diseases of the respiratory system, such as pneumonia and bronchitis, as well as pain from muscle and nerve ailments.

YELLOW ROCKET or common winter cress (*Barbarea vulgaris*) is so plentiful that it may dominate a whole field and give an appearance of solid yellow. It first appears in

early spring as a bright green rosette of leaves. Later as many as a dozen or so stems may arise from one root crown, each stem growing from one to three feet in height.

The leaves of yellow rocket are dark green, shiny and variable. Typically, the stalked (two to five inch) leaves are divided in five sections that resemble "rounded ears," the terminal one being larger than the others. The upper leaves are lobed, clasping, and toothed. Its numerous bright yellow



Winter Cress
(*Barbarea vulgaris*)

flowers appear in a raceme that is sweet scented. Each petal is one third inch wide and are twice as long as the sepals. The flowers blossom from April to August.

The fruit is a three fourths to one and one half inch erect pod that lies close to the stem, closely resembling the pod of black mustard but with a much shorter beak.

Look for yellow rocket along stream banks, meadows, waste places, and roadsides.

The genus name *Barbarea* honors Saint Barbara, whose day is celebrated on December 4. Yellow rocket is one of the few green plants that is often found growing on this day. *Vulgaris* is latin for "common" in obvious reference to the extensive distribution of this species.

Yellow rocket has had a long history of use. There are reports of its having been cultivated by the early Egyptians, Greeks, and Romans. The rosettes of leaves are among the first greens that can be gathered for fresh salads or as pot herbs. Even the flower stalks are edible if collected when the flower is still in the bud.

The seeds of yellow rocket have value for wildlife. They are food for wildlife. They are food for both the mourning dove and the pine grosbeak.

There is a double yellow rocket that is a worthwhile addition to the flower garden.

WATER CRESS (*Nasturtium officinale*) is an aquatic plant that may be found creeping over mud, floating in water or partly submerged. Its hollow stem grows up from one to two feet in length and are connected to a creeping rootstalk. The leaves are compound, consisting of from three to nine oval to heart-shaped leaflets. The terminal leaflet is larger than the others.

Flowers of water cress are borne at the top of the stem in open clusters. Each flower is attached by a short stem. The four small white petals are twice as long as the sepals. Four sepals are present in the calyx and these are shed early. The blossoming time is from April to October. Its fruit is long and thin (up to one inch) and curves upward.

Water cress has become widely naturalized in North America. It is found in brooks and spring-fed streams.

The genus name *Nasturtium* is from the Latin word meaning "twisted nose," referring to the supposed effect of eating the peppery

leaves. *Officinale*, the species name, means "of the shops," indicating that it was once available in apothecary shops for medicinal uses.

Water cress has long been used to treat a variety of ailments. Its common name, scurvy grass, indicates its value in preventing this disease. It is high in both vitamins A and C. It has been used as a diuretic, to treat mild digestive disturbances and catarrh of the upper respiratory tract. However, there is danger in prolonged or excessive use. The juice should not be used unless it is diluted because it can irritate the throat and stomach.

Water cress is often cooked as a pot herb or used as a salad green. If there is uncertainty about the purity of where the plant is growing, purifying tablets should be used.

CUCKOO FLOWER or lady's smock (*Cardamine pratensis*) is one of the very attractive mustards with colorful flowers. The slender, unbranched stem arises from a short rhizome and may reach a height of up to 20 inches. Its leaves consist of numerous small paired leaflets varying from ovate to round to kidney-shaped, with the terminal leaflet being the largest. The basal leaves are long-stalked, but the stalks get gradually shorter as the leaves appear higher on the stem.

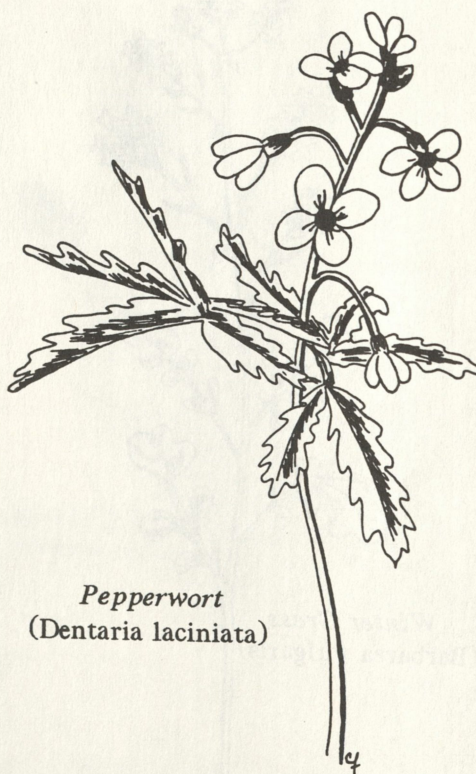
The flower is arranged in open terminal clusters. They are either white or rose and sometimes are double. Its four half-inch petals are three times the length of the calyx. The ovary of each flower is three times as long as it is broad. Blossoming time is from April to June.

Fruit seldom forms on the cuckoo flower. If it does appear, it is a one inch long, slender pod. It generally reproduces in a vegetative manner. New plantlets develop from the bases of the leaflets.

The cuckoo flower is usually found growing along streams,

swamps, springs, and moist meadows.

Cardamine, the genus name, comes from two Greek words *kardio* and *damao*, meaning "to subdue the heart." In ancient times it was used in the treatment of heart ailments. The species name *pratensis* means "of the meadows" referring to one place where it might be found. Its common name cuckoo flower, originated from the fact that the plant is often covered with a watery foam called "cuckoo spit" or "frog spit." A small insect



Pepperwort
(*Dentaria laciniata*)

called a leaf-hopper produces the foam when it is in its larval stage. Juice from the stem becomes mixed with air to create a temporary froth-like home.

The cuckoo flower contains large amounts of mustard oil and is rich in vitamins and minerals, especially vitamin C. It may be added to salads raw or eaten as a cooked vegetable or used to flavor soups.

As a medicine, it has been used to treat indigestion or to promote the appetite.

TOOTHWORT or pepperwort (*Dentaria laciniata*) is an early blooming spring flower that grows to a height of from eight to 18 inches. Its stem arises from a succulent rootstalk which has many indentations and is very peppery.

The two to three leaves of the stem are either opposite or whorled beneath the flower. Its basal leaves develop after the plant has blossomed. There are typically three leaves that are deeply cut into five thin sections which may be sharply toothed, but this varies.

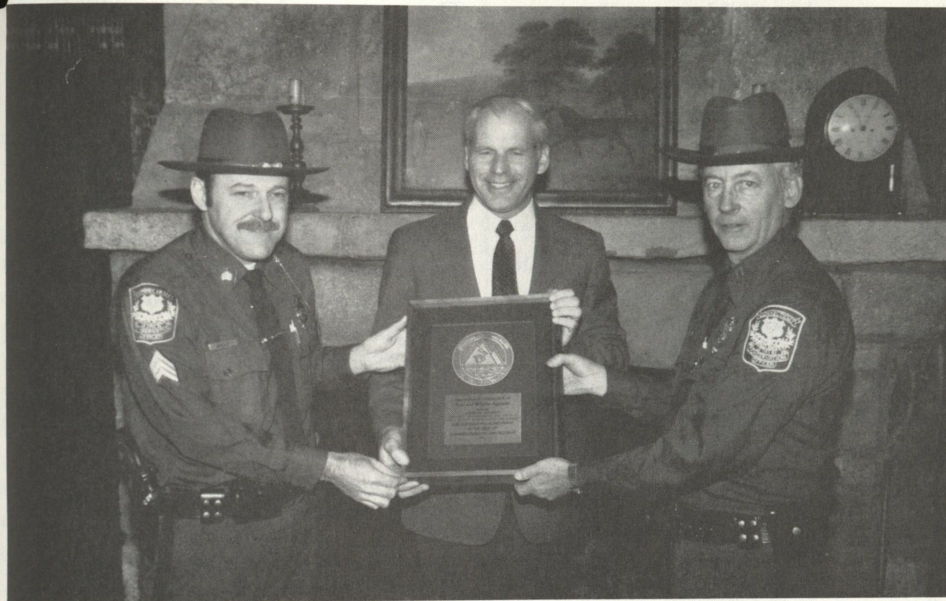
The flowers of toothwort appear as several blossoms in a terminal cluster. Its petals are white or pinkish. They are up to two thirds of an inch long and are backward curving. The sepals are about half the length of the petals. There is a single pistil. The flowers appear from April to June. Its fruit is a slender pod up to one and a half inches in length that curves upward.

Toothwort is found in rich moist woodlands. The genus name *dentaria* comes from the Latin word *dens*, which means "a tooth." This alludes to the toothed rhizome of some species. This species has a rhizome that is toothless or obscurely toothed. *Laciniata*, the species name, means "slashed," which describes the deeply cut leaves.

Toothwort has a number of nutritional uses. Its rootstalk may be used as a trail nibble or it can be sliced and used in a sandwich or in salads. Sometimes, because of its peppermint taste, it is used as a substitute for horseradish. A pinch of salt is usually added.

Crinkleroot or toothwort (*Dentaria diphylla*) is another similar species that may be found growing in the same habitat. It may be blossoming at the same time as *Dentaria laciniata*, but it usually flowers a little later and is not quite as common. It has only two leaves (diphylla) and its rootstalk is not divided into segments, but is continuous and quite long and conspicuously toothed. Both species have similar uses as food.

The Bulletin Board



The DEP's Bureau of Law Enforcement, as a result of a long-term undercover operation - Operation Berkshire - in cooperation with New York, Massachusetts, and the U.S. Fish and Wildlife Service, was awarded this plaque by the International Association of Fish and Wildlife. Operation Berkshire resulted in the destruction of a large criminal network dealing in wildlife.

Pictured above: Sergeant Joseph Marks, supervisor, Northwestern District; Robert Buyak, director, Law Enforcement Bureau; and Captain Harry Csech, supervisor, Western District. (Photo: R.Paier)

Museum Events

"Where to Find Birds in Connecticut," the 1990 annual meeting of the Connecticut Ornithological Association Society will be Saturday, March 24, in the Art Gallery of Jorgensen Auditorium at UConn, Storrs, from 8:30 a.m. to 5 p.m. The meeting is co-sponsored by The Connecticut State Museum of Natural History. Open to the public, admission is \$8, students are \$5; early preregistration, mailed by March 10, is \$5 per person. Mail registration to: COA, 314 Unquowa Road, Fairfield, CT 06430. For information contact Winnie Burkett in Storrs (429-3194); George Zepko in Middletown (days: 347-9411 ext 2822; nights: 347-1133); or Debra Miller in Franklin MA (508) 520-1289.

Morning lecture topics include: "Woodland Birding in Southeastern Connecticut," by Jay Hand; "The Lower Connecticut River and Assorted Shorebird Spots," by Andy Griswold; "Boston Hollow, Connecticut's

North Woods," by Bob Craig; "The Connecticut Shore from the New York Border to Sherwood Island State Park," by Frank Mantlik; "Connecticut Arboretum and the Thames River," by Bob Askins; "Hawks at Hammonasset," by Ray Schwartz; "Birding the Hartford Area," by Jay Kaplan.

In the afternoon there will be a brief business meeting followed by other activities including a panel discussion of birding locations and social gathering.

A family day, with hands-on activities for children, "Sharks, Sharks, Sharks," sponsored by The Connecticut State Museum of Natural History, will be Sunday, March 11 from 1 - 5 p.m. in Jorgensen Auditorium at UConn in Storrs. No preregistration is necessary, pay at the door; admission is \$2 per Museum member or \$5 per Museum family and \$3 for nonmembers, \$7 per nonmember family. Hands-on activities, videos, and movies will be on-going throughout the afternoon; at 3 p.m. there will be a slide lecture,

"Sharks: Monsters or Marvels?" by Harold "Wes" Pratt, president of the American Elasmobranch Society and a marine biologist at the National Marine Fisheries Service in Narragansett, R.I. For information call 486-4460. ■

Seedling Brochures

Seedling sale brochures are now available from Connecticut's Soil and Water Conservation Districts.

The Districts offer a wide variety of tree, shrub, and ground cover seedlings suitable for conservation plantings. These include planting for reforestation, wildlife habitats, windbreaks, erosion control, and as Christmas trees. Several of the Districts are also offering fruit tree seedlings, potted blueberry plants, wildflower seeds, and fertilizer tablets. Orders are now being taken and distribution of seedlings scheduled for April.

To obtain a brochure or further information, contact your local Soil and Water Conservation District: Fairfield County, 744-6108; Hartford County, 688-7725; Litchfield County, 567-8288; New Haven County, 269-7509; New London County, 887-4163; Tolland County, 875-3881; Windham County, 774-0224.

The Soil and Water Conservation Districts in Connecticut are non-profit agencies that provide technical assistance to farmers, private land owners, and local governments in cooperation with the USDA-Soil Conservation Service and Connecticut's DEP. All programs are available to anyone without regard to race, color, creed, sex, age, handicap, or national origin. ■

PACE Events

To mark the 20th anniversary of Earth Day, People's Action for Clean Energy (PACE) will sponsor the following events:

1.) On two Sundays, April 1 and April 8, PACE will sponsor two open houses in the Greater Hartford Area, featuring the use renewable energy

technologies.

2.) On Saturday, April 7, PACE will open a month-long exhibit of rare current photographs taken in the Soviet Union of Chernobyl, the deserted city of Pripiyat, and of resettled victims of the Chernobyl accident.

3) PACE is co-sponsoring an environmental delegation of Soviets who are dedicated to ecological sanity. The delegation will make a number of public appearances in Connecticut.

For further information on these and other PACE activities, phone (203) 693-4377; or write PACE, Inc., 101 Lawton Road, Canton, CT 06019. ■

Earth Management Seminar

Fairfield County Soil and Water Conservation District Alternate Supervisor, John W. Deering, will chair The University of Hartford Construction Institute's "Earth Management" seminar March 27, 1990. Deering is a member of the Construction Institute, and is also on the program committee. The seminar will be held at the Konoover Center, University of Hartford, from 7:45 a.m. until 12:30 p.m. The cost for members is \$30 per person; \$35 for non-members.

The dramatic results of improper earth management have created a general awareness that the earth itself is a limited resource subject to irreparable damage. This is especially the case in a state like Connecticut, where an aroused regulatory community, itself having limited resources, attempts to balance the need to protect the environment with the necessity for needed construction projects. Earth management requires the reconciliation of the competing interests of the regulatory community, the owner of record, those who design the project, those who build the project, and those who finance the project. The thrust of this program is the emphasis on the team approach to determine, at the outset, the scope and viability of these various bases, as opposed to a team review at

the outset, inevitably results in a project costing more and, in many cases, results in the project not going forward at all.

Therefore, this program will include a presentation by a representative of the Connecticut DEP, a local land conservation officer, and a representative of the U.S. Army Corps of Engineers. Environmental legal counsel then will outline the permitting process and its pitfalls. Thereafter, a presentation will be made by the designer, owner of record and contractor, taking into consideration the regulatory and financial concerns, to include a presentation by construction counsel. The goal of this program is to understand the need for early coordination and team approach among all of these varied interests.

For further information, write The Construction Institute, University of Hartford, 312 Bloomfield Avenue, West Hartford, CT 06117-0395; or phone (203)243-4445. ■

Dinosaur State Park

The following events are scheduled at Dinosaur State Park:

"Herbs: Interesting and Useful Plants." A workshop by Nina Ford, herb lore specialist. Date and Time: March 24, 1990, 1:00 p.m. This hands-on workshop answers the whys, wheres, whats, and hows of starting an herb garden at home. A brief slide talk followed by samples of herb plants and tastings of herb foods and drinks will illustrate the benefits that an herb garden can provide for you and your family. Feel free to bring questions or even a sketch of your yard. This program is limited to 20 people.

"Beginning Birding." A slide talk and walk with Mary Brescia, Naturalist at Dinosaur State Park. Date and Time: March 31, 1990 1:00 p.m. Learn the basics of birding: how to use binoculars, how to use a field guide, and the use of field marks to identify birds.

The program includes a walk on the park's trails in search of early spring migrants. Bring binoculars and field guides if you have them. A few pairs of binoculars and some field guides will be available. For all ages.

Both programs are free with Exhibit Center admission: adults \$1.00, children 6-17 years \$.50, Children under six are free.

Dinosaur State Park is located at Exit 23 off I-91, West Street, Rocky Hill, 06067. For further information, phone (203)529-8423 ■

Cave Alpha

Three youngsters mistakenly trapped within a desert cavern by EL Ar, commander of the robots of Cave Alpha, face the challenge of helping to rebuild a quality of life on earth after a worldwide disaster.

The story in the cartoon booklet adventure, *Robots of Cave Alpha: Creating a Livable Land*, emphasizes the role of the individual in environmental decision-making. The cartoon booklet is one in a series of educational cartoon booklets and teachers' guides available from the Soil and Water Conservation Society (SWCS). The booklets help young people understand how environmental management decisions are made and what individuals, small groups, and governments can do to influence the quality of life for citizens.

A free brochure that describes the content of each booklet and lists discount prices for quantity purchases is available from SWCS at 7515 Northeast Ankeny Road, Ankeny, IA 50021-9764; (515) 289-2331; or see for yourself. Order a sample set of cartoon adventures for only \$3.00. For an additional \$3.50 you can order a sample set of all the teacher's guides to accompany the booklets.

SWCS is a private, non-profit international conservation organization dedicated to advancing the science and art of good land and water use. It has 13,000 members in the United States, Canada, and 80 other countries. ■

The Night Sky

by
Francine Jackson

LOOKING OVERHEAD this month, you will notice that Gemini, the Twins, containing the very prominent planet Jupiter, has moved appreciably to the west. Coming up on the left, or east, is the familiar sickle — or backwards question mark — that announces Leo, the Lion. But, between these two very easily seen constellations appears to be rather empty space. Actually, in this dark region of the sky is a famous star pattern, one representing a hero to animals everywhere: Cancer, the Crab.

Still visible, but sinking slowly into the west, is Orion, the Hunter, the prominent hour-glass figure of the winter sky. According to legend, Orion considered himself such an incredible hunter the he decided his main goal in life was to kill all the animals in the world. As you can imagine, all the ani-

mals of the world weren't very thrilled with this idea, and tried their best to get rid of Orion. Unfortunately, Orion prevailed, and soon most of the creatures, both large and small, cowered at the thought of seeing the mighty Hunter.

Except the little crab. One evening, as Orion was engrossed in his trade, he suddenly felt a pinching on his ankle. Looking down, he was surprised to see a tiny crab trying its best to attack him. Laughing, Orion raised his foot off the ground, and shook it vigorously, causing the crab to drop to the ground. Orion then proceeded to step on it, then stamped the little crab into the earth.

Although the little crab had met his demise, the other animals were so impressed with his courage that they asked the gods to place him in the sky, as a sign of heroism.

Finding Cancer is relatively easy, a surprising fact because the crab is just about the dimmest constellation in

the sky. Simply find Pollux, the eastern head of Gemini, and Regulus, the "dot" of the backwards question mark in Leo. Draw a line between these two, and mark the center point of the line. You will be close to the center of a dim upside-down "Y," Cancer's basic shape. If you are in a dark area, you may think your eyes are picking up miniscule points of light there. A pair of binoculars will show that you've found a star cluster just at the limit of the unaided eye. To ancient people, it resembled a hive of bees busily swarming around the heart of the crab. This is M44, the beautiful "Beehive." In early times, this star cluster was allegedly used as a weather indicator. If this cluster were unable to be seen in an otherwise clear sky, chances were a storm was approaching. Unfortunately, as you may have guessed, these days, with sky conditions as they are, if we tried using M44, we would predict horrible weather every night. ■

Letters to the Editor

Endnote

Thank you for your fine interview with Ed Sarabia, and for the touching follow-ups by SEARCH kids (which must have been a conscious decision by the editor to place immediately following Ed's piece.) It was a rare and wonderful moment to reflect on the very shy poetry of the spiritual and the natural way of things. How sad that such fundamental truths play such a small role in most lives. I am grateful to you for your eloquent challenge to pause and reflect.

Ed and the kids brought a fresh perspective to the magazine. You remind me to try to rise above the squalid, insignificant horrors of man's world. With simplicity and honesty you sang of peace and harmony. Thank you for sharing the wisdom.

Toby Goodrich
Norwich

The magazine is wonderful. It is a great accent to my home library and

quite useful to me in my teaching of high school biology/ecology.

George E. Pulley
Wallingford

It is a fine magazine — relevant, responsible, and extremely interesting. It is heartening to read of your television series, of your Project SEARCH, and to be able to know something of the Indian experience through Ed Sarabia's willingness to show his insights and wisdom.

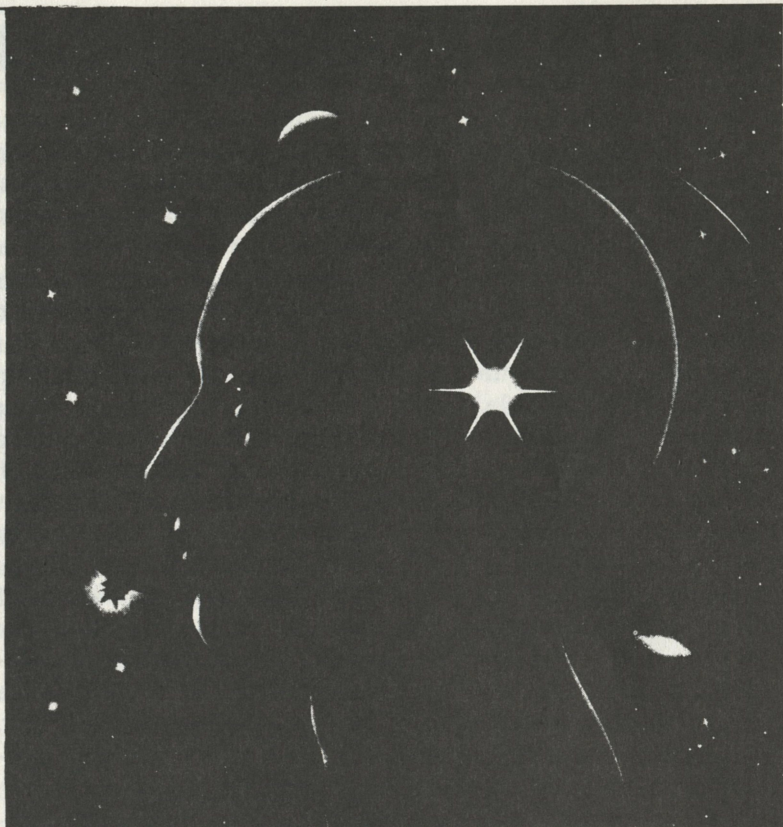
Margaret Wadsworth
Stonington

Excellent articles. I send my older issues to my son in the marines overseas. Your issues are all over the world by now. Keep up the good work.

Lorraine M. Demma
Hartford

"Rivers of blood have flowed, columns of smoke have obscured the sky, but surviving all these dooms, the tradition has remained inviolate down to our own time. According to it, the world reposes upon thirty-six Just Men, the Lamed-Vov, indistinguishable from simple mortals; often they are unaware of their station. But if just one of them were lacking, the sufferings of mankind would poison even the souls of the newborn, and humanity would suffocate with a single cry."

Andre Schwarz-Bart



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